Claims

1. A flame retarder to be contained in a resin composition to confer flame retardant properties on said resin composition, said flame retarder comprising:

an acrylonitrile- styrene based polymer containing at least acrylonitrile and styrene; wherein said acrylonitrile- styrene based polymer is sulfonated with a sulfonating agent containing less than 3 wt% of moisture, whereby sulfonic acid groups and/or sulfonate groups have been introduced into said acrylonitrile- styrene based polymer.

2. The flame retarder according to claim 1 containing sulfur components of said sulfonic acid groups and/or sulfonate groups in a range from 0.001 wt% to 16 wt%.

3. The flame retarder according to claim 1 wherein said sulfonating agent is one or more selected from the group consisting of sulfuric anhydride, fuming sulfuric acid, chlorosulfonic acid and polyalkylbenzene sulfonic acid.

4. The flame retarder according to claim 1 wherein said acrylonitrile- styrene based polymer is redeemed resin originally produced for specified purposes and/or used up.

5. A flame retardant resin composition containing a flame retarder to confer flame retardant properties on the resin composition, wherein

said flame retarder includes an acrylonitrile- styrene based polymer containing at least acrylonitrile and styrene; wherein

said acrylonitrile- styrene based polymer is sulfonated with a sulfonating

agent containing less than 3 wt% of moisture, whereby sulfonic acid groups and/or sulfonate groups have been introduced into said acrylonitrile- styrene based polymer.

6. The flame retardant resin composition according to claim 5 wherein said flame retarder contains sulfur components of said sulfonic acid groups and/or sulfonate groups in a range from 0.001 wt% to 16 wt%.

7. The flame retardant resin composition according to claim 5 wherein said sulfonating agent is one or more selected from the group consisting of sulfuric anhydride, fuming sulfuric acid, chlorosulfonic acid and polyalkylbenzene sulfonic acid.

8. The flame retardant resin composition according to claim 5 wherein said resin composition contains not less than 3 wt% of one or more of polycarbonate, an acrylonitrile- butadiene- styrene copolymer, polystyrene, an acrylonitrile- styrene copolymer, polyvinyl chloride, polyphenylene oxide, polyethylene terephthalate, polybutylene terephthalate, polysulfone, thermoplastic elastomer, polybutadiene, polyisoprene, an acrylonitrile- butadiene rubber and nylon.

9. The flame retardant resin composition according to claim 5 wherein said said resin composition and/or said acrylonitrile- styrene based polymer is redeemed resin originally produced for specified purposes and/or used up.

10. The flame retardant resin composition according to claim 5 wherein a fluoro olefin resin is contained as an anti-drip agent.

11. A method for producing a flame retarder to be contained in a resin composition to confer flame retardant properties on said resin composition, comprising

sulfonating an acrylonitrile- styrene based polymer, containing at least acrylonitrile and styrene, with a sulfonating agent containing less than 3 wt% of moisture, for introducing sulfonic acid groups and/or sulfonate groups into said acrylonitrile- styrene based polymer.

12. The method for producing a flame retarder according to claim 11 wherein said sulfonating agent is one or more selected from the group consisting of sulfuric anhydride, fuming sulfuric acid, chlorosulfonic acid and polyalkylbenzene sulfonic acid.

13. The method for producing a flame retarder according to claim 11 wherein redeemed resin originally produced for specified purposes and/or used up is used as said acrylonitrile- styrene based polymer.

14. A method for producing a flame retarder to be contained in a resin composition to confer flame retardant properties on said resin composition, comprising:

reacting a powdered acrylonitrile- styrene based polymer, containing at least acrylonitrile and styrene, with an SO_3 gas for performing sulfonating processing for introducing sulfonic acid groups and/or sulfonate groups into said acrylonitrile-styrene based polymer.

15. A flame retarder to be contained in a resin composition to confer flame retardant properties on said resin composition, wherein

sulfonic acid groups and/or sulfonate groups are introduced into an aromatic polymer containing monomer units having aromatic skeletons in an amount ranging between 1 mol% and 100 mol%, said polymer having a weight average molecular weight ranging between 25000 and 10000000, and wherein

the sulfur content of said sulfonic acid groups and/or sulfonate groups ranges between 0.001 wt% and 20 wt%.

16. The flame retarder according to claim 15 wherein

said aromatic polymer has an aromatic skeleton in a side chain and contains at least one or more of polystyrene, styrene- butadiene copolymer (high impact polystyrene), an acrylonitrile- styrene copolymer, an acrylonitrile- butadiene- styrene copolymer, an acrylonitrile- chlorinated polyethylene- styrene resin, an acrylonitrile- styrene- acrylate copolymer, an acrylonitrile- ethylene- propylene rubber- styrene copolymer and an acrylonitrile- ethylene- propylene- diene- styrene resin.

17. The flame retarder according to claim 15 wherein said sulfonating agent has an aromatic skeleton in a main chain thereof and contains at least one or more of polycarbonate, polyphenylene oxide, polyethylene terephthalate, polybutylene terephthalate and polysulfone.

18. The flame retarder according to claim 15 wherein said aromatic polymer is sulfonated with a sulfonating agent with less than 3 wt% of moisture for introducing said sulfonic acid groups and/or sulfonate groups into said polymer.

19. The flame retarder according to claim 18 wherein said sulfonating agent is one or more selected from the group consisting of sulfuric anhydride, fuming sulfuric acid, chlorosulfonic acid and polyalkylbenzene sulfonic acid.

20. The flame retarder according to claim 15 wherein said aromatic polymer is a redeemed resin originally produced for specified purposes and/or used up.

21. A flame retardant resin composition to which flame retardant properties have been imparted by a flame retarder contained therein, wherein

sulfonic acid groups and/or sulfonate groups are introduced into the resin composition containing monomer units having aromatic skeletons in an amount ranging between 1 mol% and 100 mol%, said polymer having a weight average molecular weight ranging between 25000 and 10000000, and wherein

the sulfur content of said sulfonic acid groups and/or sulfonate groups ranges between 0.001 wt% and 20 wt%.

22. The flame retardant resin composition according to claim 21 wherein said flame retarder is contained in an amount ranging between 0.001 wt% and 30 wt%.

23. The flame retardant resin composition according to claim 21 wherein said aromatic polymer has an aromatic skeleton in a side chain and contains at least one or more of polystyrene, styrene- butadiene copolymer (high impact polystyrene), an acrylonitrile- styrene copolymer, an acrylonitrile- butadiene- styrene copolymer, an acrylonitrile- chlorinated polyethylene- styrene resin, an acrylonitrile- styrene- acrylate copolymer, an acrylonitrile- ethylene- propylene rubber- styrene

copolymer and an acrylonitrile- ethylene- propylene- diene- styrene resin.

24. The flame retardant resin composition according to claim 21 wherein said aromatic polymer said sulfonating agent has an aromatic skeleton in a main chain thereof and contains at least one or more of polycarbonate, polyphenylene oxide, polyethylene terephthalate, polybutylene terephthalate and polysulfone.

25. The flame retardant resin composition according to claim 21 wherein said aromatic polymer is sulfonated with a sulfonating agent containing less than 3 wt% of moisture whereby said sulfonic acid groups and/or sulfonate groups are introduced into the polymer.

26. The flame retardant resin composition according to claim 25 wherein said sulfonating agent is one or more selected from the group consisting of sulfuric anhydride, fuming sulfuric acid, chlorosulfonic acid and polyalkylbenzene sulfonic acid.

27. The flame retardant resin composition according to claim 21 wherein not less than 5 wt% of one or more of polycarbonate, an acrylonitrile- butadiene- styrene copolymer, polystyrene, an acrylonitrile- styrene copolymer, polyvinyl chloride, polyphenylene oxide, polyethylene terephthalate, polybutylene terephthalate, polysulfone, a thermoplastic elastomer, polybutadiene, polyisoprene, acrylonitrile-butadiene rubber and nylon is contained in the resin composition.

28. The flame retardant resin composition according to claim 21 wherein said resin composition and/or said aromatic polymer is redeemed resin originally produced

for specified purposes and/or used up.

29. The flame retardant resin composition according to claim 21 wherein a fluoro olefin resin is contained as an anti-drip agent.

30. A flame retarder to be contained in a resin composition to confer flame retardant properties on said resin composition, wherein

the flame retarder includes an aromatic polymer containing monomer units having aromatic skeletons ranging between 1 mol% and 100 mol%, and wherein sulfonic acid groups and/or sulfonate groups are introduced in an amount ranging between 0.01 mol% and 14.9 mol% into the aromatic polymer.

31. The flame retarder according to claim 30 wherein said aromatic polymer has an aromatic skeleton in a side chain and contains at least one or more of polystyrene, a styrene- butadiene copolymer (high impact polystyrene), an acrylonitrile- styrene copolymer, an acrylonitrile- butadiene- styrene copolymer, an acrylonitrile-chlorinated polyethylene- styrene resin, an acrylonitrile- styrene- acrylate copolymer, an acrylonitrile- ethylene- propylene rubber- styrene copolymer and an acrylonitrile- ethylene- propylene- diene- styrene resin.

32. The flame retarder according to claim 31 wherein said aromatic polymer has a weight average molecular weight ranging between 10000 and 10000000.

33. The flame retarder according to claim 30 wherein said aromatic polymer has an aromatic skeleton in a main chain thereof and is at least one or more of polycarbonate, polyphenylene oxide, polyethylene terephthalate, polybutylene

terephthalate and polysulfone.

34. The flame retarder according to claim 30 wherein said aromatic polymer is sulfonated with a sulfonating agent containing less than 3 wt% of moisture whereby said sulfonic acid groups and/or sulfonate groups are introduced into the polymer.

35. The flame retarder according to claim 34 wherein said sulfonating agent is one or more selected from the group consisting of sulfuric anhydride, fuming sulfuric acid, chlorosulfonic acid and polyalkylbenzene sulfonic acid.

36. The flame retarder according to claim 30 wherein said aromatic polymer is redeemed resin originally produced for specified purposes and/or used up.

37. A flame retardant resin composition to which flame retardant properties have been imparted by a flame retarder contained therein, wherein the flame retarder includes an aromatic polymer containing monomer units having aromatic skeletons ranging between 1 mol% and 100 mol%, and wherein sulfonic acid groups and/or sulfonate groups have been introduced in an amount ranging between 0.01 mol% and 14.9 mol% into the aromatic polymer.

38. The flame retardant resin composition according to claim 37 wherein said aromatic polymer has an aromatic skeleton in a side chain and contains at least one or more of polystyrene, a styrene- butadiene copolymer (high impact polystyrene), an acrylonitrile- styrene copolymer, an acrylonitrile- butadiene- styrene copolymer, an acrylonitrile- chlorinated polyethylene- styrene resin, an acrylonitrile- styrene- acrylate copolymer, an acrylonitrile- ethylene- propylene rubber- styrene

copolymer and an acrylonitrile- ethylene- propylene- diene- styrene resin.

39. The flame retardant resin composition according to claim 38 wherein said aromatic polymer has a weight average molecular weight ranging between 10000 and 10000000.

40. The flame retardant resin composition according to claim 37 wherein said aromatic polymer has an aromatic skeleton in a main chain thereof and is at least one or more of polycarbonate, polyphenylene oxide, polyethylene terephthalate, polybutylene terephthalate and polysulfone.

41. The flame retardant resin composition according to claim 37 wherein said aromatic polymer is sulfonated with a sulfonating agent containing less than 3 wt% of moisture whereby said sulfonic acid groups and/or sulfonate groups are introduced into the polymer.

42. The flame retardant resin composition according to claim 41 wherein said sulfonating agent is one or more selected from the group consisting of sulfuric anhydride, fuming sulfuric acid, chlorosulfonic acid and polyalkylbenzene sulfonic acid.

43. The flame retardant resin composition according to claim 37 wherein not less than 5 wt% of one or more of polycarbonate, an acrylonitrile- butadiene- styrene copolymer, polystyrene, an acrylonitrile- styrene copolymer, polyvinyl chloride, polyphenylene oxide, polyethylene terephthalate, polybutylene butylate, polysulfone, a thermoplastic elastomer, polybutadiene, polyisoprene, acrylonitrile-

butadiene rubber and nylon is contained in the composition.

44. The flame retardant resin composition according to claim 37 wherein said resin composition and/or said aromatic polymer is redeemed resin originally produced for specified purposes and/or used up.

45. The flame retardant resin composition according to claim 37 wherein a fluoro olefin resin is contained as an anti-drip agent.